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ABSTRACT

This document consists of four symposium papers each providing a critical examination of a particular data collection technique in vocational education research. Texts of the following presentations are provided: "Mail Survey Research," by Betty Heath-Camp; "The Telephone Interview as a Data Collection Technique," by James P. Key; "The Personal Interview as a Data Collection Technique," by Maureen E. Kelly; and "The Audio Cassette Tape as a Data Collection Technique," by Ismail bin Yahya. (MN)

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DATA COLLECTION IN EDUCATIONAL RESEARCH

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DATA COLLECTION TECHNIQUES IN VOCATIONAL EDUCATION RESEARCH:

A COMPARATIVE ANALYSIS

A symposium conducted for
the American Vocational Education Research Association

December 7, 1985
Atlanta, Georgia

Topic 1 - The Mail Questionnaire as a Data Collection Technique

Presenter: Betty Heath-Camp, Virgina Tech

Topic 2 - The Telephone as a Data Collection Technique

Presenter: James P. Key, Oklahoma State University

Topic 3 - The Personal Interview as a Data Collection Technique

Presenter: Maureen E. Kelly, University of Arizona

Topic 4 - The Audio Cassette Tape as a Data Collection Technique

Presenter: Ismail bin Yayha and Jeff Moss, Louisiana State University

Discussant: Sandra Wilkins, Auburn University

Symposium Organizer: Gary E. Moore, Louisiana State University

DATA COLLECTION TECHNIQUES IN VOCATIONAL EDUCATION RESEARCH:

An Introduction

Gary E. Moore
Louisiana State University

Research in vocational education has been criticized as being isolated from other academic disciplines (Matthews and Campbell, 1983). The research techniques and methodologies used in disciplines such as psychology, law, and sociology have largely been ignored in vocational education according to Matthews and Campbell. They urged the profession to look at what other academic disciplines are doing in the research arena.

One area of vocational education research that appears to be stagnate and out of touch with other academic disciplines is that of data collection. The mail questionnaire appears to have dominated all other forms of data collection in vocational education research. In a study of vocational education doctoral dissertations bin Yahya and Moore (1984) found that over 70 percent of the dissertations were survey research and depended primarily on the mailed questionnaire as the data collection device. Well over half of the research studies conducted in agricultural education during the past decade used mailed questionnaires (Mannebach, McKeena & Pfau, 1984).

The merits of using the mail questionnaire have been discussed by Orlich, et. al. (1975), Som (1973), and Raj (1972). However, Frankel and Dutka (1983), Maclean and Green (1979) and Meyer (1971) have pointed out many serious drawbacks in using mailed questionnaires. Other disciplines utilize a wide array of data collection techniques such as personal interviews and the telephone. In view of the criticism of Campbell and Matthews it appears the profession could benefit from re-examining the merits and drawbacks of using mailed questionnaires along with an examination of alternative data collection techniques which could be used in vocational education research.

Purpose of the Symposium

The primary purpose of this symposium is to acquaint (or re-acquaint) vocational education researchers with four techniques for collecting data in vocational education research. The merits and shortcomings of each of the four techniques will be critically examined. The four techniques are:

1. The Mail Questionnaire
2. The Telephone
3. The Personal Interview
4. The Audio Cassette Tape

For each of the techniques the presenter will briefly review what the literature has to say about the technique and then the presenter will share his/her personal experiences in using the particular technique. Each of the techniques has been used by the presenters in conducting research in vocational education.

If a profession is to grow and improve it should be receptive to new ideas. While three of the data collection techniques presented in the symposium may not be new, they are not commonly used in vocational education research. As a result of attending this symposium, researchers may be more likely to use the data collection techniques discussed. The quality of the data collected in vocational education research and the resulting research findings may be improved.

The intended outcome of this symposium is to improve the quality of research in vocational education.

Mail Survey Research

A Research Paper Presented
At a Symposium for The
American Vocational Education Research Association
At The
American Vocational Education Association Conference
Atlanta, Georgia
December, 1985

Presented By

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A Review of the Techniques for Conducting Mail Survey Research

Introduction

The survey tends to be the standard method of evaluation within education circles (Arbuckle, cited in Horowitz & Sedlacek, 1974) with the mail questionnaire being the prevalent survey (Parten, cited in Horowitz & Sedlacek, 1974). Hillestad (1977) identifies the survey as a valuable exploratory tool for finding out what people know, what people like and dislike, what they think, what has taken place, and what is happening now. However, both Humphries (1983) and Hillestad (1977) contend that even though mail questionnaires are among the most frequently used tools of educational research, they are also among the most abused. Humphries (1983) offers two reasons for the misuse of the questionnaire: "(a) researchers fail to see the place of this data-gathering technique in the overall picture of research procedures and (b) researchers underestimate difficulties of constructing and using high-quality questionnaires" (p. 5).

Hoskins (1976) states that most questionnaires seek information that can be easily obtained elsewhere, request trivial data, or ask questions that are too broad. However, this situation can be eliminated if the researcher will pay attention to the following basic principals: (a) the function of the questionnaire is to gather information for specific purposes and (b) the researcher should not try to use a questionnaire if another research tool is more functional and

practical (Hoskins, 1976). Sudman & Bradburn (1984) state that "when mail procedures are used appropriately, they can be expected to produce results ranging from almost as good as to substantially better than those that can be obtained by more costly methods" (p. 33). Let's look at the advantages and disadvantages that are associated with the mail survey technique.

Advantages and Disadvantages of Mail Survey Research

Advantages of Mail Survey

Less bias. Interviewer bias is eliminated on questions that could be sensitive or embarrassing when presented by an interviewer (Pride, cited in Cote & Grinnell, 1984).

Less Costly. The mail questionnaire technique is less costly than other techniques such as the personal interview that calls for recruiting, training, and supervising (Hochstim & Athanasopoulos, 1970; Sudman and Bradburn, 1984).

Respondent reflection and convenience. Respondents can decide how much time to spend filling out the questionnaire (Sudman & Bradburn, 1984) and they can complete the questionnaire at their own convenience (Eigelberner, cited in Horowitz & Sedlacek, 1984)

Time conservation. Mail surveys can be used to gather data quickly (Cote & Grinnell, 1984). They can also be distributed so that all respondents receive them at about the same time (Humphries, 1983). In addition, the amount of time and energy required on the part of the researcher is less (Plog, cited in Horowitz & Sedlacek, 1974).

Standardized questionnaire. All respondents receive the same questionnaire presented in the same way (Hillestad, 1977).

Ease of tabulation. If questionnaires are well constructed, tabulation is easily completed through electronic means. "A tightly-structured questionnaire can provide comparable data for rapid analysis" (Hoskins, 1976, p. 12).

Wide Geographical Distribution. A mail survey enables one to reach large samples that may otherwise be unavailable (Hillestad, 1977; Hoskins, 1976). Distant populations and individuals who are too busy to be interviewed may also be reached (Cote & Grinnell, 1984). In addition, mobile subjects may be followed without prohibitive cost (Hochstim & Athanasopoulos, 1970).

Of course where there are advantages to any research technique, there are also disadvantages. The following discussion provides some disadvantages of mail questionnaires.

Disadvantages of Mail Survey

Inaccurate Mailing lists. Mailing lists may be incomplete or inaccurate; or questionnaires may not be forwarded to new addresses (Lockhart, 1984).

Non-response and inaccurate answers. Non-response and the inability to check responses are two of the biggest problems in mail survey research (Kerlinger, cited in Cote & Grinnell, 1984).

Lack of Spontaneity of answers. Respondents have more opportunity to consider their responses thus eliminating spontaneity of answers (Moser & Kalton, cited in Humphries, 1983).

Item dependence. No item can be considered independent of others because the respondents can read all questions before answering a questionnaire (Moser & Kalton, cited in Humphries, 1983).

Method of completion. Researchers cannot always be sure the questionnaire is being completed by the intended respondent (Humphries, 1983) or that the respondent is honestly answering the questions (Sudman & Bradburn, 1984).

Simplicity of questions. Mail questionnaires do not allow the depth in questions that other methods allow such as the personal interview. The questions on a mail survey must be simple and straightforward (Hillestad, 1977).

Suspicion toward questionnaires. Some individuals may have little experience with questionnaires and may be suspicious of the study (Sudman & Bradburn, 1984).

Prejudice against questionnaires. Berdie & Anderson (cited in Humphries, 1983) suggest that inaccurate information may be given by respondents distrustful of questionnaires.

Questionnaire Design

A well designed questionnaire plays an important role in encouraging respondents to complete the questionnaire. Swisher (1980) is of the opinion that "the most effective

incentive to respond to a questionnaire is the quality of the questionnaire itself" (p. 159). Hillestad (1977) identifies the design of the questionnaire as an important step to increase response rates.

Once all research techniques have been explored and the researcher decides that the mail questionnaire is the best technique to use for the problem, the first step in designing the survey is to develop the questions. The following guidelines are offered for developing questions and organizing the survey instrument:

1. Visualize the respondents. Try to think of every possible way they may react to the question (Hillestad, 1977).
2. Arrange questions in either a psychological or logical order and group questions dealing with each aspect of the study (Hillestad, 1977). Swisher (1980) recommends sets of logically related content. The order of the questionnaire should maintain interest so the respondent will be motivated to continue (Demaline & Quinn, 1979).
3. Make apparent that the questions are related to the purpose of the study (Hillestad, 1977) and that the need for the questionnaire is clearly evident (Demaline & Quinn, 1979). Keep in mind that the more the researcher knows how the research data are going to be used and the procedures that will be

used in case of the unexpected, the more appropriate the questions will be (Swisher, 1980).

4. Use an easy-to-answer format. (Hillestad, 1977). It should be physically and logically consistent (Swisher, 1980). Dillman (cited in Humphries, 1983) recommends that responses be made by circling rather than marking. This avoids confusion.
5. Decide the form the questions should take, structured or unstructured response questions (open ended or closed responses) (Hillestad, 1977). Structured questions reduce the time required by the respondent and ease the researcher's analysis of the data. Structured questions also provide a series of response choices (Humphries, 1983) and pre-coded categories of answers. (Swisher, 1980). Check-off items are best where possible (Hillestad, 1977).
6. Use simple language that is precise and clearly stated (Hillestad, 1977; Humphries, 1983). To the extent possible, all technical terminology should be removed (Demaline & Quinn, 1979)
7. Questions should apply to all respondents (Humphries, 1983). They should know the answers or have opinions (Demaline & Quinn, 1979).
8. Use no "loaded" or "leading" questions (Hillestad, 1977), so-called "double-barreled"

questions, (Humphries, 1983), or 'tell-me-every-thing-you-know-about" types of questions."' (Hoskins, 1976, p 11). If the word "and" appears in the question, ask yourself if the question is double-barreled (Babbie, 1973).

9. Questions must be answerable (Hillestad, 1977). They should allow the respondent to answer quickly and easily (Swisher, 1980). Enough response options should be included (Humphries, 1983) and for structured questions all answers should be available to the respondent (Hillestad, 1977).
10. Deal with only one topic in a question and have responses that relate directly to the question (Hillestad, 1977).
11. Remove emotional overtones from the questions (Hillestad, 1977; Swisher, 1980) and avoid questions that are embarrassing to the respondents (Humphries, 1983).
12. Threatening questions should not be used. Threatening questions are those to which society is perceived to have the "right answer" (Sudman & Bradburn, 1984).
13. Avoid negative questions. Negative questions lend themselves to misinterpretation (Babbie, 1973).

14. Branching on mailed questionnaires should be kept simple. An example of branching is allowing the respondent to omit a question that does not apply. (Sudman & Bradburn, 1984).
15. Prepare dummy tables of your anticipated responses. (Hillestad, 1977). Dummy tables will allow you to see if you will obtain usable data from the questions.

Even though the literature could not single out "the attractiveness of the survey" as being a contributing factor to high returns, researchers such as Dillman, Dillman, and Makela (1984) in their Total Design Method have shown evidence that attention to detail makes a difference in return rates. Swisher (1980) states "the technical quality of the instrument is of paramount importance" (p. 164). Color was not supported in the literature as contributing to high returns, yet researchers tend to think that color paper and/or ink are more eye catching (Humphries, 1983; Swisher, 1980). Many researchers recommend that the questionnaire be kept as short as possible (Hillestad, 1977) yet research shows that length of the questionnaire makes little or no difference in the response rate. (Baumgartner, 1984; Sletto cited in Hochstim & Athanasopoulos, 1970).

Pilot testing is an extremely important step in the development of a survey instrument and is necessary to assure an effective instrument (Humphries, 1983). Isaac & Michael (1971) identify the failure to pretest a questionnaire as one

of the common errors in questionnaire studies. This is the point at which many ambiguous and irrelevant questions can be detected. Dillman, (cited in Humphries, 1983) recommends two groups to pilot test the instrument, colleagues who are familiar with the study and potential users of the survey results. Pilot test respondents should be asked to identify troublesome questions, additional responses, and difficulties in completing the questionnaire. The pilot test can be used to help determine if the respondents can provide the needed information (Humphries, 1983). It may be helpful to analyse the pilot test data as the real data will be analysed. The pilot test process should be conducted as many times as necessary to obtain the best possible instrument (Hillestad, 1977). Pilot testing can also provide information on the reliability and validity of an instrument.

Questionnaire Procedures

Once the questionnaire is designed, the next step is to design the procedures for mailing and receiving the questionnaire. The use of and the nature of the cover letter, the use of personalization and prenotification, the timing, the type of postage, to use or not to use a due date, the promise of anonymity, and the use of incentives are all decisions that a researcher has to make. Yet when it comes to singling out the effectiveness on increasing response rates for any one technique the literature shows substantial support only for persistent follow-up and monetary incentives (Baumgartner & Heberlein, 1984; Kanuk and Berenson, cited in

Powers & Alderman, 1982). However, Dillman et al. (1984) show empirical evidence for a combination of procedures in their Total Design Method and other researchers find support for using various techniques when conducting mail survey research. Therefore, several procedures will be discussed.

Letters and Personalization

Several types of letters were identified in the literature; the cover letter, the endorsement letter, and the pre-notification letter. A number of questions concerning such letters have been examined in the literature: should the cover letter be personally signed, does the status of the signature make a difference, should the cover letter be personally typed, and do pictures of the researcher help? Even though Humphries (1983 and Dillon et al. (1984) recommend personalization, it seems that personalization and status of the researcher alone do not tend to increase the response rate. Horowitz & Sedlacek (1972) find in their review of the literature that personalized signatures on the cover letter do not guarantee higher response rates and in their own research find that neither status of the researcher nor type of signature resulted in a higher return rate.

Rucker, Hughes, Thompson, Harrison, & Vanderlip (1984) determined the effects of status by using two pictures with different dress styles and signatures that reflected status of position. They find that pictures did not induce early returns and may have actually depressed total returns. Further they did not find support for status increasing

returns. Nor did Nitecki (1970) find support for sender's prestige increasing response rates in his study on the "Effects of Sponsorship and nonmonetary Incentive on Response Rate."

Rucker et al. (1984) identify five studies that support prenotification and cite Linsky (1975) who found 12 studies that supported prenotification by letter, postcard, telephone, or personal contact. All methods of prenotification increase response rates with telephone being the most effective. However, telephone prenotification does tend to increase the cost of the survey considerably. If an effective cover letter can be developed, the use of prenotification may not be necessary.

Humphries (1983) provides key points for developing a cover letter:

1. The purpose of the study should be briefly stated. Graduate students should refrain from saying the results will be used in a dissertation or thesis.
2. Let the respondents know they are important.
3. Explain how the data will be used.
4. Sponsorship of an organization to which most of the respondents belong should be gained and cited in the letter.
5. Volunteer to answer questions and provide phone numbers to do so (Dillman, cited in Humphries, 1983).

6. Thank the respondent and offer the results.
7. Further recommendations involve:
    a. Personalized addresses
    b. A formal salutation
    c. A personally signed signature

Along with the notion of prenotification, the case for sponsorship tends to find support by researchers as a means for introducing the researcher to the respondent. Baumgartner & Heberlein (1984) find support in their review of the literature that government and university sponsorship tends to enhance responses while market research firm sponsorship may decrease response rate or at best does not affect it.

Timing and Due Dates

Timing and due dates are two other decisions that have to be made in the process of mailing and receiving the mail survey. Altschuld & Lower (1984) attribute the high rate of return in their study on teacher evaluation to the topics of the questionnaire being of immediate concern to the respondents.

There seems to be conflicting data in the literature in regard to the effect of due dates. Swisher (1980) states that a due date is important because people tend to return material on or after a due date. Roberts et al. (cited in Baumgartner & Heberlein, 1984) find that for the initial mailing and first follow-up a three week deadline increase responses, but deadlines do not increase response rates for

further follow-ups. On the other hand, Humphries (1983) states that there is no empirical evidence to support the use of deadlines. Some researchers recommend that deadlines not be used because they increase non-response.

Anonymity

The importance of anonymity tends to be stressed when conducting mail survey research (Demaline & Quinn, 1979; Hillestad, 1977). Baumgartner & Heberlein's (1984) report conflicting results in their review of literature, they conclude that it does not appear to be necessary to use anonymous procedures in order to obtain high results, yet the effects of anonymity are still not clear. However, they indicate that anonymity may be important in some instances such as with groups who do not want their identity known.

Mail Procedures

It is generally accepted that if you want something to be returned in the mail, you should include a self-addressed stamped envelope. A self-addressed stamped envelope will improve response rates significantly (Hoskins, 1976). But, secondary questions are whether to use window envelopes and what class of postage should be used on both the return envelope and the sending envelope. Baumgarter & Heberlein (1984) state that the class of postage that obtains the best response rate has not yet been determined in the research literature. Humphries (1984) seems to think from his review of research that the type of postage on both the outgoing and return envelope affects response rates. He identifies

special delivery and hand-stamped return envelopes as more effective than postage-permit envelopes. In conflict, Rossmann & Astin (1974) report that the use of nonprofit outgoing postage, window envelopes, and business reply returns lower the costs and do not significantly lower the return rate. There tends to be no agreement as to the effect of postage on the outgoing or return envelope.

Incentives

The use of incentives has been extensively explored as a technique of improving response rates. The only incentive that has consistently surfaced in the literature as improving response rates has been money (Baumgartner & Heberlein, 1984; Cote & Grinnell, 1984; Humphries, 1983). Baumgartner & Heberlein (1984) find that an incentive of a prepayment of $.25 to $1.00 is worthwhile, but only in the second mailing. Non-monetary incentives seem not to be as effective as money (Humphries, 1983). Nitecki (1978) finds that a bookmark as an incentive has no effect on response rate. However, Powers & Alderman (1982) find that although the promise of feedback has a significant positive effect on initial response rates, follow-up contact with non-respondents and a shorter questionnaire have more of an effect.

Cost Cutting Techniques

Even though various mail survey strategies may affect response rates, cost effectiveness is a factor that must be taken into consideration for most researchers. One of the primary reasons for using mail research in place of other

techniques, such as the interview, is the cost. Hochstim & Athanasopoulos (1970) show a contrast of mail cost per respondent of $6.55 each compared to $13.65 a for personal interview (p. 79). Rossmann & Astin (1974) find that among most techniques, "cheapest is best" (p. 279). They find that some cost cutting techniques, such as nonprofit outgoing postage, window envelopes, and business reply returns, can be used by researchers in higher education without seriously affecting the response rate. Horowitz & Sedlacek (1972) conclude that the most efficient, least expensive method available for mail surveys will not significantly affect return rates from faculty members. Thus, the literature tends to support many cost cutting techniques except in the case of follow-up.

Respondents/Non-respondents

In mail survey research, perhaps the biggest concern is that of response rate. Heberlein & Baumgartner (cited in Altschuld & Lower 1984) report that mail survey return rates range from an average of 46 percent from the initial mailing to an average of 84 percent for the fourth mailing. Yu & Cooper (cited in McKillip, 1984) identify the average return rate for studies between 1965 and 1981 to be 47.3 percent (p. 85).

Who is the respondent/non-respondent and what causes an individual to be one or the other? Erdos (cited in Humphries 1983) provides three classifications of respondents:

1. Eager beavers who will answer almost anything.

2. People who are not interested in answering questionnaires, but will do so if they are interested in the subject, if the subject is important, or if there is some incentive for answering the questionnaire.
3. Born non-respondents who probably won't answer anything. (p. 14)

Fortunately according to one study only about three percent fall in the third group (Robinson & Agisim, cited in Humphries 1983). This is fortunate because the burden of proof falls on the researcher to determine that there is no significant difference between the answers for the respondents and the non-respondents (Humphries, 1983).

The question now becomes, "What factors affect the return of a questionnaire?" Heberlein & Baumgartner, and Yu & Cooper (cited in McKillip, 1984) identify three factors that affect the return rate: "(a) Respondents' interest in the questionnaire topic, (b) the number of contacts with the respondents, and (c) the use of a small monetary incentive" (pp. 77-78) McKillip (1984) states that respondents will have a positive attitude toward return of a questionnaire if they perceive that return will lead to positive consequences, and they will have a negative attitude if they perceive that the consequences of return are negative. Lockhart (1984) offers interesting fruit for thought in his six stages of returning behavior:

1. Receiving the questionnaire. The researcher must assure that the respondent receives the questionnaire. If it is not received, it cannot be completed. This calls for accurate samples and accurate addresses.
2. Opening the mail. What entices the respondent to open the envelope? There must be some incentive to open the questionnaire. Some affiliation with a know organization would be helpful.
3. Forming an overall impression. The decision to complete the questionnaire. Salience is an important factor.
4. Answering the questions. The questions must be easy to answer.
5. Returning the questionnaire. This must be convenient.
6. Dealing with non-respondents. Reminders have worked effectively with the second classification of respondents previously identified.

Lockhart (1984) contends that some individuals will complete all stages within minutes, others will take longer, and some will never complete all the stages. Dillman (cited in Cote & Grinnell, 1984) identifies three conditions that must be met to maximize responses: "minimize the costs for respondents, maximize the rewards for doing so, and establish trust that those rewards will be delivered" (p. 11).

Sudman & Bradburn (1984) identify groups for which they think surveys are appropriate and groups for which they think surveys are inappropriate. They identify most special groups such as physicians, teachers, and accountants as highly cooperative in returning questionnaires. They offer three reasons for this cooperation: (a) the educational level is usually higher and these individuals have more experience with forms, (b) the questionnaires usually deal with topics closely related to the groups' professions, and (c) a mail questionnaire can be more easily completed than a personal interview. Baumgartner & Heberlein (1984) point out that higher response rates can be expected from respondents who are in school or in the Army. On the other hand the less educated and the aged are populations for which surveys are not appropriate. These groups often find questionnaires difficult to read and to complete, and they are often suspicious of the study (Sudman & Bradburn, 1984).

Follow-up procedures

"Follow-up contacts have been recognized for more than sixty years as an effective way of increasing response rates" (Lindsey, cited in Baumgartner & Heberlein, 1984, p. 67) Rigorous follow-up procedures gain stronger support in the literature than other techniques for improving response rates (Babbie, 1973; Horowitz & Sedlacek, 1974; Humphries, 1983; Baumgartner & Heberlein, 1984). Researchers, such as Ryan (1978) agree that adequate response rates are critical to the credibility of a study. He states that "Follow-up mailings

can sometimes mean the difference between having a worthwhile study and a worthless study" (p. 581). Babbie (1973) suggests that a study must have at least a 50% return return, while others identify 80% as the minimum (Demaline & Quinn, 1979; Hillestad, 1977; Kerlinger, 1973).

How many follow-ups does it take to get an adequate return? Futrell & Lamb (1981) find that there is no need to send out a follow-up at all if only one is to be mailed. The results of their research indicate that if the researcher is not willing to spend the time and money to send several follow-ups including additional questionnaires, they should not send anything beyond the initial mailing. Therefore, in order to gain the response rate desired in most studies, the researcher will need to send several follow-ups.

Babbie (1973) states that "the longer a potential respondent delays replying, the less likely he is to do so at all" (pp. 163-164). Therefore, a well planned sequence of follow-ups should be implemented.

The first follow-up should be sent about five days after the initial mailing to serve as a reminder to those who have not mailed the survey and as a thank you note for those who have (Parten, cited in Humphries, 1983). This follow-up may consist only of a letter or a post card.

The second follow-up should include the questionnaire in addition to the reminder letter (Parten cited in Humphries, 1983; Rossman and Astin, 1974). Futrell & Lamb (1981) find that the inclusion of the questionnaire with the second and

third follow-up reminder letters significantly increases response rates over follow-up reminder letters alone. The second follow-up (third mailing) should be sent about two to three weeks after the initial mailing.

The third follow-up, if necessary, should be mailed about three weeks after the second follow-up (Humphries, 1983). Humphries (1983) further suggests alternatives to the third follow-up such as telephone calls, registered follow-up mailings, telegrams, and interviews. Comer & Kelly (cited in Baumgartner & Heberlein, 1984) find that telephone follow-ups produce a higher response rate than does mail follow-ups. These alternatives tend to get expensive and the researcher must analyse the cost/benefits to using these techniques. But, the evidence is clear. Follow-up is the most effective technique to obtain the required data for a sound mail research study.

Concluding Comments

The popularity of the questionnaire as a data-gathering device seems firmly entrenched in the field of educational research (Cote & Grinnell, 1984) Even though there tends to be conflicting data on the response rate effectiveness for many techniques, it is my opinion, based on the literature review and personal experience, that a quality research instrument, a convincing cover letter, and stringent follow-up will result in desired return rates.

In this paper, techniques that are unique to using mail survey research and many research studies that have

investigated and the use of these techniques have been reviewed. It was not the intent to discuss other research tasks such as analyzing the data, sampling, and research designs that are also characteristics of other types of research. The topics that were discussed may seem mundane and mechanical, but as Babbie (1973) states "The researcher who believes the quality of his research is solely a function of his analytical and theoretical abilities is sorely misled. A brilliant research design that is improperly executed will result in failure. No detail is to small or too mundane to be safely ignored" (p. 169).

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DATA COLLECTION IN VOCATIONAL EDUCATION RESEARCH: A COMPARATIVE ANALYSIS

THE TELEPHONE INTERVIEW AS A DATA COLLECTION TECHNIQUE

What are the desired characteristics and outcomes sought from any data collection technique? Do we not seek techniques which are economical, both in terms of time and dollars? Do we not seek techniques which collect data that are both valid and reliable? Do we not seek techniques which will give us the most representative sample of our population by giving us the greatest percentage of usable responses? Do we not compare techniques in terms of these characteristics and outcomes?

The purpose of this paper is to report the advantages and disadvantages we have found in the telephone interview as a data collection technique as a result of our experiences with its use in several studies over the past few years. We have conducted telephone interview studies ranging from a survey of the general public of the State of Oklahoma to the survey of vegetable buyers in a single county.

THE TELEPHONE INTERVIEW STUDIES AT OSU

We first used the telephone interview to gather data for a state-wide study of the awareness of the general public of the components of the Division of Agriculture at Oklahoma State University (Cosner et.al., 1980). This study surveyed a sample of the entire population of the State of Oklahoma. Since a confidence level of .98 was chosen, this resulted in a sample size of 2401. After considering the size of the state, the cost of mailed questionnaires and the relatively low response rate expected from mailed questionnaires, we decided to use the telephone interview technique. The face-to-face interview was not considered due to the prohibitively high cost of travel and the time which would be required.

This first use of the telephone interview technique was followed by a study of wheat farmers' awareness of integrated pest management (IPM) in a four-county area of north-central Oklahoma (Finley, 1981). Again, the .98 confidence interval was chosen, which yielded a sample size of 1556. The unique aspect of this study was the fact these same farmers were contacted twice, once to establish baseline information before the IPM educational program, and again at the end of the program to measure impact (Key et. al., 1985).

A paper presented at the American Vocational Association Convention for the American Vocational Education Research Association, Atlanta, Georgia, December 7, 1985, by James P. Key, Department of Agricultural Education, Oklahoma State University.

The next three studies involved smaller areas and smaller sample sizes (382), since the .95 confidence level was used. The first of these involved a follow-up study of one county out of the state-wide awareness study after that county had conducted an awareness program (Bergman, 1982). The next was a single-county study of the awareness of the 4-H Program in that county (Hackett, 1982). The third study was also a single-county study of vegetable purchase and usage patterns of the residents of a major metropolitan area (Thompson, 1982). In addition, we have advised the Entomology Department at OSU on two other telephone interview studies involving all the alfalfa producers in the state.

ADVANTAGES OF THE TELEPHONE INTERVIEW

The primary reason for our choice of the telephone interview as a data gathering technique in the beginning was for the higher rates of return anticipated. The next consideration was lower cost, compared to the mailed questionnaire or face-to-face interview. Another major consideration had to be the time required, compared to the face-to-face interview.

Rates of Return

The anticipation of a higher rate of return was justified in the actual rates of return achieved by the different studies. The state-wide, general public study had usable responses from 1,662 of the 2,401 people contacted for a 69.22 percent response rate. The initial sampling of the wheat IPM impact study resulted in 1,194 usable responses of 1,556 contacts for a 76.73 percent rate. The follow-up phase of the study achieved 858 usable responses out of contacts with 946 farmers who were still growing wheat, for a rate of 90.70 percent. The three studies with sample sizes of 382 achieved return rates of 65.44 for the awareness program follow-up, 92.00 for the 4-H awareness survey, and 74.86 for the vegetable-use survey.

TABLE 1

Investigator	Population Size	Confidence level	Sample Size	Respondents	Non-Respondents	Percent Res. Rate
COSNER, et al. (1980)	Infinite	.98	2,401	1,662	739	69.22
FINLEY (1981)	2,885	.98	1,556	1,194	362	76.73
KEY, et al., (1985) (Follow-up of FINLEY sample contacted, still growing wheat)			946	858	88	90.70
BERGMAN (1982)	Infinite	.95	382	250	132	65.44
HACKETT (1982)	Infinite	.95	382	351	31	92.00
THOMPSON (1982)	Infinite	.95	382	286	96	74.86

The response rate appeared to be affected by the time called, caller's sex, caller's manner, respondent's relationship to the topic of the call, and respondent's age. Most of the calling was done between 5 pm and 10 pm. It was found that generally people could be contacted at home during these hours, with the best hours being between 7 pm and 9 pm. Female callers usually achieved higher response rates. However, it appeared the calling manner made the greatest difference, since the highest return rate (92.00) was achieved by a male caller. If the respondents had a relationship to the topic of the call, the response rate appeared to be slightly better, as evidenced by the higher responses from the wheat farmers to the call about wheat IPM. An exception to this case might be the strong return (92.00) from the general public to the 4-H survey. Older respondents appeared slightly more willing to answer the questions than the younger. Their calls usually took longer also as many seemed to like to chat. All of these surveys were designed to take from 3 to 5 minutes on the average as longer surveys tend to reduce response rates.

Cost

With a WATTS line or computerized WATTS box, the telephone interview is a very low-cost survey, even over a wide area. For a local area, such as a single county, the telephone interview costs even less. Even if 1+ calling is required, the telephone interview costs about the same as the mail questionnaire and results in a greater return rate.

For the general public survey of the State of Oklahoma the actual costs were:

ITEM	COST
1. 1,696 telephone calls from OSU	$ 552.71
2. 705 telephone calls from the State Department	$ 268.06
3. Temporary clerical assistance/caller payroll	$1,623.70
4. Cost of questionnaire	$ 120.11
Total	$2,564.58

If 1+ dialing was used instead of the WATTS box network, the cost of the telephone calls would have been $1,708.44. This would have increased the total actual cost of the study to $3,452.25.

It was estimated that a mailed questionnaire to the same 2401 sample with two follow-up mailings would have cost $3,260.59 and would have yielded a 30 to 40 percent return rate. This cost would have been quite a bit more than the actual telephone interview cost and slightly less than the 1+ dialing cost. The 30 to 40 percent response, or about half what was achieved by the telephone interview, would have doubled the cost per response.

The actual cost of the vegetable-use survey in one county utilizing a sample size of 382 (.95 confidence level) was:

ITEM	COST
1. 382 telephone calls	$123.52
2. Temporary clerical assistance/caller payroll	$286.00
3. Cost of questionnaires	$ 16.66
	$427.18

Time

The actual calling time from the OSU phones was logged as 5,103.4 minutes for the 1,696 calls. This averaged approximately 3 minutes per call. Of course there was much other time spent preparing for those calls. The overall time spent preparing for and making the calls was spread over about two months and involved eight callers. The calling was done in the evenings and callers had conflicts in schedule from time to time, which accounted for part of the duration. It was estimated the total time would be about comparable for the mailed questionnaires to the 2401 sample, allowing for two follow-ups. It was difficult to estimate the time for face-to-face interviews, but would, no doubt, be quite a bit more, counting travel time.

Additional Advantages

One of the additional advantages of the telephone interview technique is that phone numbers are a convenient mode of contact for respondents, especially where the general public is involved. There are even computer programs for random selection of telephone numbers from directories. An additional advantage of the telephone interview over the mailed questionnaire is the ability to clarify questions the respondent might have and to establish rapport with the individual. This latter advantage also allows the caller to establish a good image for the institution for which the calls are made. An additional advantage discovered with the wheat farmer survey was that respondents can be located through other respondents. We were able to locate farmers who might have moved or otherwise be difficult to locate by asking those we were able to contact who lived near them.

DISADVANTAGES OF THE TELEPHONE INTERVIEW

One of the greatest disadvantages is the inability to sample the people who do not have telephones and those with unlisted numbers. Groves and Kahn (1976) indicated about 10 percent of the general population did not have telephones in 1976. The percentage has probably decreased quite a bit since that time. We also know from census data that those without phones represent the lower income population. If the characteristics of this group are important to a study, it will have to be recognized that underrepresentation may occur. Random digit sampling techniques have been developed to virtually eliminate the problem of unlisted numbers (Dillman, 1978).

Another disadvantage is that telephone exchanges do not follow common geographical bounderies, such as county lines. The exception to this rule is state bounderies. No state lines are crossed by exchanges now. When trying to sample within a county, over sampling must be done to replace those who are selected from that exchange, but are found to live in another county.

A difficulty facing any attempt to use the telephone interview is getting good callers. The voice quality, personality and rapport on the phone are most important characteristics for a caller. It was our experience that callers with pleasing voice quality, a pleasant personality and the ability to establish rapport on the phone could generate a greater percent of responses than those with less of these qualities.

An additional difficulty is catching people at home. As has been previously stated, the calling time is important. Weekday, evening-calling proved effective for us between the hours of 5 to 10, with the most effective hours between 7 to 9. We also used at least three call-backs before giving up on a number. After that, one of the additional numbers from the randomly selected oversampling pool was used to replace it.

A disadvantage of the telephone interview is the limited time available for the interview, if a good response rate is desired. We decided to limit our interview schedules to the amount of information which could be gathered in 3 to 5 minutes of straight questionning. This decision was based on our expectation that the response rate would be reduced substantially if a longer questionnaire were used. Compared to the face-to-face interview, this would limit the amount of information which could be gathered.

An additional problem encountered when the general public was called was that there was a tendency to get more female respondents than male. No particular person was asked for except one over 18 years of age. Toward the end of the survey, the male was requested in an attempt to balance the male-female ratio.

Cautions and Precautions

The preparation of the interview schedule is the most important phase of the telephone interview, as is true with any interview or questionnaire. However, it is our belief that with the telephone interview, it is doubly important. If the schedule does not have the questions worded correctly to gather the information needed, the calls are wasted. Also, the questioning sequence must flow correctly to produce a smooth interview which will get maximum completed, usable interviews. The introductory remarks must be short, clear, yet adequately identify the caller and establish trust in order to obtain cooperation.

Caller training is another important part of the telephone interview process. The way the caller comes across on the phone will, in most cases, decide whether the person is willing to answer the questions or not. We had callers practice using the interview schedule with one another or with us, after we had a telephone company specialist hold a seminar on effective calling techniques. We then had them do actual calls to a pilot group similar to the group to be called, but who were not included in the survey. This thorough preparation paid off once the calling began.

A consultant researcher made a suggestion which would help us establish the validity of the information we gathered on the phone. He suggested we run face-to-face interviews with a sample of our telephone survey group and compare the information gathered to establish additional validity for the information gathered by telephone.

PERTINENT LITERATURE

Three books were found which were most informative concerning the telephone interview. Frey's (1983) Survey Research by Telephone was the most recent located. After a broad introduction to the telephone survey, he described the book by chapters: "The next chapter compares the telephone survey with the mail and face-to-face methods on several dimensions. The purpose of this section is not to define which is the best method, but to assist the researcher in selecting the most appropriate technique given his or her problem, resources and timetable." Chapter 3 discusses the various sampling procedures that are available to those who would utilize a telephone survey. Questionnaire construction is the subject of Chapter 4. The problems of question wording and question order receive the most attention in this section. Chapter 5 outlines procedures for the administration and implementation of a telephone survey. This section includes a thorough description of Computer-Assisted Telephone Interviewing (CATI). The final chapter discusses ethical issues associated with telephone surveys and elaborates on the future prospects for telephone interviewing.

Dillman (1978), in his book, Mail and Telephone Surveys, did an excellent job of describing and contrasting mail and telephone surveys, while at the same time comparing them to the face-to-face interview. Groves and Kahn (1976) did an outstanding job of comparing the telephone interview with the face-to-face interview by the use of side-by-side surveys in the same study. Their book, Surveys by Telephone: A National Comparison With Personal Interviews, describes in detail the advantages and disadvantages of both.

Many good journal articles were found concerning many aspects of the telephone interview. The more recent, plus some of the more important older articles are listed in the bibliography. It was found that most of the articles concerning the telephone interview were reported in the Public Opinion Quarterly. The Journal of Marketing Research was the next best source, with a variety of journals accounting for the remaining articles.

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The Personal Interview as a Data Collection Technique

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Review of the Literature

Like the questionnaire, the interview can vary from a highly structured event to a very unstructured conversation. An example of a highly structured interview is a telephone or person on the street interview, where time and focus are of the essence. This type of interview is likely to be of a relatively short duration and would be used when the questions are fixed, and one is seeking response from as diverse a group as possible.

Somewhere in between is the focussed interview, where "...the wording of the questions is not strictly specified, but the interview is nevertheless focussed since the information that is sought is in an area experienced by the respondent" (Adams and Schaneveldt, 1985, p.216). This is the kind of interview method that I have used in investigating the development of vocational education faculty as researchers (Kelly, 1982) and one that I will discuss later in this paper.

At the other end of the interview continuum is the nondirective or open interview. This type of interview, popularized by Carl Rogers, is used to provide a framework for interaction that is seen as a safe setting, one in which the respondent sets the mood, tone and pace of the interview. Such unstructured interview methods are used when the subject is potentially quite wide ranging, as in Margaret Mead's work with native Samoans.

There are a number of advantages to the interview method. Adams and Schvaneveldt (1985) note that there are at least seven major advantages to the interview as a research method. In addition, I have identified four

advantages to the specific method that I used, focussed interviewing.

Of the seven general advantages to interviewing as a research method, the first is the advantage that comes from conversing with the respondent personally, that of increased cooperation. This generally results in a higher participation rate, since most people find it less of an effort to talk than to write. In addition, once the interview has begun, rapport or trust can be established, which generally leads to more accurate responses.

Second, since the interviewer has established direct contact with the respondent, interviewing has the advantage of allowing the researcher to discuss the interview and respond to any questions the respondent may have.

Third, the quality of the data obtained using this method is likely to be great owing to the advantage that one gains due to the personal nature of the method. A skilled interviewer can "read" people, assess moods and probe, clarify, rephrase or restate questions to the respondent. Thus, interviewers are free to seek information in a different way or more readily seek the truthfulness of the responses.

Moreover, because this method often allows for direct observation of respondents, it allows for flexibility in the way questions are asked and for interviewer response to non-verbal clues, a distinct fourth advantage.

The opportunity an interview provides to generate motivation and rapport is the fifth advantage of the interview method. Since face to face interaction is instrumental in establishing rapport, such interaction often leads to higher levels of motivation on the part of the respondent. Conversely, one then introduces the potential disadvantage of needing to limit conversation or responses due to time or focus constraints.

A related advantage is that one is engaged in the communication process. Since most people seem to enjoy talking, this becomes a real advantage of this

method. As Adams and Schaneveldt (1985) note, essentially, the process of interviewing is the process of communicating "...the interview is very much an artful process, a process in which a sensitive and skilled practitioner can make it easier for respondents to use communication to forward the goals of scientific understanding as well as serve as a very rewarding process through directed conversation" (p.215).

Lastly, once rapport has been established, topics that are perceived as being too sensitive or emotional to put on paper can be talked about to a sensitive interviewer. Thus, the ability to handle sensitive and emotional topics is the seventh advantage of the interview method.

Since I was interested in finding out how vocational education faculty at research oriented universities were developed, and what enabled or inhibited research productivity in their current position, I employed the focussed interview method. Since the focussed interview is designed to provide detailed coverage of a particular topic, four additional advantages, particular to this method, can be identified.

Familiarity with the role of the vocational educator and the "street knowledge" of the professional researcher turned out to be a considerable advantage in using a focussed interview approach to interviewing vocational education researchers. With such background, the interviewer can openly adapt to the respondent, thereby being more likely to learn about the researcher's real behavior, experiences, and attitudes -- to become familiar with her/his feelings and problems.

A second, related advantage is awareness of the full research situation and the larger communication context of the task it involves. Thus, the focussed interview method allows looking at something in depth. Therefore, this method "..can furnish detailed narratives with fully developed readers

and plots thick with conflicting purposes and multiple constraints..." (Goldstein, 1985, p.2), and is aptly suited to the experience of researchers in vocational education.

Moreover, in my case, it afforded me simultaneous contact with the process and products of the professional who must write. By focussing on both the process and products of the research experience, I was able to read and integrate the products of vocational education researchers with the statements they made about how a particular research idea was developed. In fact, I was able to collect a file of models, each of which had some meaning to a particular researcher in my study and that was the result of the living process of research productivity.

Lastly, because I interviewed respondents from a multitude of settings and functions using the focussed interview method, I became acquainted with a wide range of professional activity, thus gaining what I believe to be a balanced perspective on the research experience. Moreover, this particular interview method is a way to keep abreast of innovations in vocational education research.

The Problem

As I alluded to earlier in this paper, the problem that I set out to describe was what facilitated or inhibited the research productivity of faculty members in vocational education. I was particularly interested in seeing whether these factors varied by sex, vocational service area or academic rank. And, like many doctoral students, I had concluded from my courses in research methods that if you wanted to describe something, the most efficient and productive way of doing so was to use a questionnaire.

However, as I was developing the questionnaire, I had the good fortune to have scheduled a conference with Egon Guba, the coauthor of the much quoted

Clark and Guba (1977) productivity studies on the education professoriate. Guba had come to the National Center at Ohio State to give a paper as part of our staff development series.

By that time, I had developed the draft of my questionnaire and in the process of having it reviewed for content validity. I thought that Guba was a good candidate to be on that panel. To my surprise, he suggested that I should rethink the methodology, going instead for a "thick" description of as diverse a group as I could find within the context of the research university and vocational education. He suggested that I attempt to interview people to get a first hand account of those who were looked to as research producers - "get as rich and diverse a sample as you can," I remember him saying.

Logistics

Thus, I reached the point when I needed to rethink the methodology of the study. In so doing, I needed to reacquaint myself with the advantages of this method and the procedures involved in interviewing. I have organized this section of the paper to reflect these six procedures - planning, sampling, the interview guide, interviewing, data collection, and analysis.

1. Planning the project to meet specific objectives

Initially, one needs to be convinced that the interview is the best method for obtaining the desired information in the study. Thus, answers to questions such as "What do I want to know? What will I do with the answers?" should clearly indicate to the researcher and others that interviewing <u>is</u> the appropriate technique for the study. Secondly, the researcher needs to have a clear idea what they will do with the information obtained through the interview.

For me, this initial stage involved much reading, questioning and

reflecting. Moreover, it brought me to the point in 1981 that I was able to intelligently reason and discuss the so-called quantitative / qualitative distinction and defend the methodology, and the purposive sampling technique I employed to obtain the sample.

This purposive sampling technique was chosen to assure that a representative sample of highly regarded vocational education doctoral programs, distributed among service areas that were both sex neutral and traditional for their sex, were included in the study. Thus, I chose to contact faculty in five vocational areas at six research oriented universities to participate in the study.

Once the method has been selected, it is appropriate to survey the published material to see what has been done. At this stage, "the professional literature has a somewhat peculiar relationship to interviewing, being both irrelevant and yet absolutely essential to it - irrelevant because the information gained through the interviewer's experience will never be found written up anywhere, essential because no one can interview from a naive position."(Goldstein, 1980, p. 5)

2.Selecting and contacting organizations or respondents

In any study, selection of respondents is usually a compromise between accuracy and cost. This is particularly true with interviews, as time, travel, and transcription costs can quickly mount up. In my case, 101 potential participants were contacted by mail to determine their willingness to participate in the study. Of the 101 faculty members contacted for participation in the study, 86 agreed to be interviewed, for a response rate of approximately 85%.

I believe that I obtained such a high response rate for two reasons. First, my initial contact letter was one that gave a full statement of the

project's purpose and format, the amount of time allotted to the interview, what, if anything, you are requested from them and the pledge of confidentiality in the reporting of the interview data.

Secondly, once I arrived at the particular university and began interviewing, I made a concerted effort to follow up on those who had not replied to my initial letter, and in some cases, to those who had refused to be interviewed. I found that once I became known around the department, it was relatively easy to use successful interview respondents to introduce and promote participation in the study to others. I suspect such tenacity in an interviewer enhances the participation rate.

On the matter of scheduling interviews, I have two tips:

1)if you ask for 45 minutes, you are likely to get an hour, due to the interest of respondents once engaged in conversation and the way time is usually scheduled.

2) Try to use conventional organizational techniques such as sex or status to schedule like respondents in similar slots as you go from place to place. Upon reflection, I wish that I had systematically slotted interviews with department chairs at the beginning or end of the week, or those from like service areas in close proximity to one another.

3.Constructing the interview guide

Although no interview will proceed exactly as planned, detailed planning will help the interviewer get the information with a minimum of error. The format of the interview should be such that the majority of the questions are open-ended, so as to get a free response. Moreover, they must be organized into a conversational structure to allow the interviewee an opportunity for full, accurate answers. Hopefully, a well organized interview will be stimulating and worthwhile for the respondent, without provoking anger or hostility. Any sensitive or potentially threatening questions should be organized in such a way as to be posed after a line of questioning and its

purpose has been established. By waiting until the respondent's involvement has been encouraged, the interview has reached that one is likely to tell the truth even if it is damaging to oneself.

During the interviews that I conducted, an experience checklist helped develop a frame of reference for the interviewee at the beginning of each interview session and gave me an idea as to where I might start our conversation. In addition, I found that simple warmup questions such as where the respondent was from and how their vocational aspirations were developed seemed to put the respondent at ease and provided an personal dimension to the interview that was helpful.

4. Conducting the interviews

A prerequisite to establishing rapport is a suitable meeting place with sufficient privacy to get detailed, honest answers. In most cases, my interviews were held on campus in the participant's office. Occasionally, scheduling interviews at professional meetings was required, and in these cases, this meant that I had to meet with people in restaurants, lobbies, and hotel rooms where (I suspect) people felt less comfortable than they might have felt in their own offices. However, with some sensitivity to possible intrusions or distractions, even a public place can be suitable. In my case, it served as another way of increasing the participation rate.

The opening of the discussion should be one that inspires confidence and interest. It is appropriate to briefly introduce oneself, and follow this by forecasting the purpose, method, and topic of the interview.

Motivating the respondent to become involved is the next step, for if stimulated by the discussion, the interviewee tends to overcome their initial reserve or anxiety and begin to voluntarily offer comments and suggestions. My topic seemed to have been a natural to motivate discussion, for every

faculty member involved in research seems to have some opinion or experience to share. Many people told me during the interview that they hadn't planned on telling me what they really thought inhibited research productivity, but once they got talking, it seemed to roll right out.

No one interview method will work with everyone, so an interviewer needs to be sensitive to each personality, and adapt his/her style to suit the individual. I have to admit that this is where I believe that I had the greatest problem in my study, for I found that interviewing such well known vocational educators sometimes left me at a loss for words, to say nothing of interview technique.

However, where there was good rapport, it allowed me to probe for answers and seek corroborating evidence on complex issues, either between or among respondents in the same field or within the same department.

One method that helped me achieve this corroboration was the method of data triangulation used in the study. In my study, both quantitative (such as counts of publications reported on vitae) and qualitative (personal interview and experience checklist) methods were used. Guba (1981) states that the use of multiple methods and triangulation of observations can add to the rigor of a study. While the context in which Guba refers to data triangulation is primarily qualitative, I believe that this added tremendously to my study, one that was completed at a time when the interview as "a way of knowing" seemed to be under close scrutiny.

5. Recording and analyzing the responses and observations.

The method I used to record my data was to audio tape each interview and take copious notes during the session. Of course, one needs to obtain permission to tape record prior to the interview. According to Freeman (1980)

sometimes reaction of subjects to tape recorder is a problem. However, being somewhat of an audiophile, I had used this study as an excuse to invest in a Sony Walkman style of tape recorder when they were just starting to appear on the market. This turned out to be quite an advantage in obtaining permission to record, since it was an interesting novelty to most respondents and was quite unobtrusive.

Here are some other tips on recording:

1) Quality 90 minute tapes are worth the investment for two reasons: they come in hard plastic protective cases and hold up much better in the long run and there is distinct psychological value in not having to stop to turn the tape over during the interview. In my case, when the tape ejected after 45 minutes, I was usually at a point in the interview where I could wrap it up or ask for more time. In addition, any space you might have on the second side can be used for another interview or (where there is minimum space), you can record your own comments after the interview or during analysis.

2) Always carry extra batteries and tapes in case either fails and protect your equipment from temperature excesses. I had one interview that could not be recorded due to simultaneous tape and battery failure and two others that were delayed somewhat due the excessively cold temperatures that morning.

Thieman (1980) encapsulates the challenge of recording and guiding the interview in the following manner: "The relationship between the interviewer and the subject is at times very intensive. During these moments the interviewer has to face the difficult demands of being able to concentrate simultaneously on having an accurate overlapping control of the situation and retaining a deep involvement in the ongoing process of mutual understanding" (p. 16). Thieman goes on to suggest that during the interview, one should give full concentration to the dialectical process. During the analysis, the researcher's responsibility is to give a proper analysis of the text given. Thus, the interviewer would have to analyze herself/himself as one of the parts in the written dialogue.

One way to incorporate the dialectical process into the interview is to use what Patton (1980) terms a successive focusing method. In the case of my

study, this means that the interviews were conducted in clusters of two institutions at a time (33% of the sample), with analysis of interview transcripts and categorization of the data into theme areas completed at three separate times. As subsequent interviews were conducted, interview questions were restated or additional questions were added to the interview. As categories developed, they were verified by a second person off-site and presented to subsequent respondents for confirmation checks.

So far as the analysis procedure is concerned, this is where the major difference between qualitative and quantitative procedures seems to end. While those who have quantitative data to code and process using the computer, interview data is "... an unweildy mass of bits and pieces -- overlapping, incomplete and often unclassifiable "(Goldstein, 1980, p.9). Therefore, it makes good sense to acknowledge that the interviewer is part of the instrumentation and must be constantly "fine tuned." Thieman emphasizes that "... we must make use of our capability as human beings to respond to and understand other human beings i.e. the respondent in our interviews. In our talks, the situation, with its expectations and fulfillments, constantly alters and this must be taken into the dialogue " (Thieman, 1980,p.6).

In my case, the interview transcripts of the resulting group of high and low producers were subjected to content analysis. Following the method outlined by Berelson (1954), two major units of analysis were used: words and themes. Therefore, when specific words were used repeatedly in interviews, such as inhibitor or enabler to research, they were recorded and categorized accordingly. Similarly, when like propositions or themes emerged -- i.e., "research ambience" or "research ethos," they were grouped together.

The results were reported using the inductive analysis procedure describe by Patton (1981) as logical analysis. This means that the investigator is

looking for emergent patterns in the data. As Guba (1981) views it, there should be internal homogeneity and external heterogeneity. Internal homogeneity refers to the extent that the data hang together or dovetail in a meaningful way. External heterogeneity refers to the degree to which differences among categories are bold and clear.

Problems and Successes

Holcolm talks about the pitfalls of the interview as follows: "The moment you turn off your tape recorder, say goodbye and leave the interview, it will become immediately clear to you what perfect question you should have asked to tie the whole thing together ... but didn't" (in Patton, 1980, p.295). Therefore, I feel that I should discuss the pitfalls of interviewing prior to concluding.

As I see it, there are three major pitfalls to interviewing - interviewer anticipation, inexperience, and probing too far.

The first, interviewer anticipation, is implied by Holcolm in the above quote. A major problem in interviewing is that the interview situation is much like any other type of communication - it encompasses a good deal more than what can be transcribed from the tape recorder. By that I mean that interviewers continually remark that what they knew had been covered during a talk did not appear in the transcription. Thus, interviewers conclude that it was an assumption they made by the sequencing of comments or the shared meaning, expressed verbally or nonverbally, between respondent and interviewer.

Interviewer inexperience is a related problem. Often, when one reviews transcripts, one notes that the inexperienced interviewer wanted a particular answer so much that s/he took the lead when the trigger word or phrase was uttered. Unless the interviewer realizes this and immediately feeds this

occurrence back to the respondent for discussion, one is left with a shakey foundation upon which to make a research conclusion.

In wanting the individual to express as much as he/she knows about the topic, we occasionally go beyond the point where the subject knows any more. Thus, the last pitfall of interviewing, probing to far, is seen. In interviewing, the ideal model is get the respondent "... to express as much as possible, to add some new facts to the body of knowledge previously known, reflect on the total description, and finally to comment on the whole process" (Thieman 1980, p. 10). When the interviewer goes beyond the point where the respondent is able to contribute, the interview momentum tends to stop, making it difficult for a satisfactory conclusion to be made to the process.

Conclusion

It should be evident that the interview is a useful and workable research method. Moreover, I hope that I have provided the reader with some workable tools in thinking through the interview setting, skill and training of the interviewer, openness and frame of the respondent, the subject under study, and a host of other situational factors that enter into the process of obtaining data via the interview.

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THE AUDIO CASSETTE TAPE AS A DATA COLLECTION TECHNIQUE IN VOCATIONAL EDUCATION RESEARCH

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Introduction

Quality research findings of any particular study largely depend on the data collection procedure. This is especially the case with surveys and other non-experimental research designs. Specifically, the technique employed to generate research data is of prime significance to the quality index of a given study.

In vocational education research, which has been dominated by survey designs, (Mannebach, 1980; Kahler, 1973; McCracken, 1970), researchers use a variety of data collection techniques. The three principal techniques in common use have been the mailed questionnaire, personal interview and telephone interview. In agricultural education, for example, the mailed questionnaire as a data collection medium is by far the most dominant technique (Mannebach, Mckeena & Pfau, 1984).

There are merits in the use of each of the data collection techniques as researchers would submit. For example, Orlich, et al. (1975), Som (1973), and Raj (1972) outline the advantages of the mailed questionnaire as a technique. The strengths associated with the use of personal interviews have been extensively studied by Cannell, Oksenberg, and Converse (1979) and Weissman (1981). Also researchers have employed the telephone as a primary medium to collect data. Its use has been advocated over others, particularly personal interviews, by Finley and Key (1983). Miller (1983), Dillman (1979), and Groves and Kahn (1979) also recommend its use. They argue that it helps reduce error variance, which could result from respondents' evasiveness of highly sensitive issues.

However, each of these three commonly used techniques, like all other research procedures, has attendant weaknesses or drawbacks. Frankel and

Dutka (1983), MacLean and Genn (1979) and Meyer (1971), to mention only a few, point to the serious disadvantages in using the mailed questionnaire. Obvious concern for data reliability, particularly in very sensitive issues, resulting from the use personal interviews has been expressed by Cannell, Oksenberg and Converse (1979) and Weissman (1981). As to the problems with the use of the telephone to collect research data, Sudman (1981, p. 1) writes "There may be slightly higher refusal or don't know responses and shorter answers ... Because respondents' suspicions may be higher while motivations to talk are not as great."

At this point, the question that could be asked is: Is there yet another alternate data collection medium that could be useful to vocational education researchers to accommodate certain specific circumstances? Obviously, the answer is in the affirmative. The audio cassette tape has been employed as a research device to collect data. Needless to say it has been used with great success in other educational activities.

A number of studies on the impact of different methods of feedback to student performance suggest that the audio cassette tape appears to be a very useful tool (Hurst, 1975; Kahrs, 1974; Miller, 1973; Moore, 1977). As Moore (1977, p. 9) concluded "The greatest advantage of using tape recorded feedback is in the saving of faculty time."

In a more recent study (bin Yahya, 1985), the audio cassette tape was proven to be the most appropriate technique in data collection under the given circumstances. Dubridge (1981) also pointed out three merits of this medium as (1) control or directness, (2) informality, and (3) flexibility of communication.

Empirical research on the efficiency of this medium relative to the other three commonly used techniques is yet to be undertaken. This forum is a humble beginning for the much needed dialogue in this regard. Additionally, it could bring about efforts directed at such comparative studies.

The Problem

For the purpose of the symposium, the principal problem is an investigation into the effectiveness of using the audio cassette tape to collect research data. It should be pointed out that this was only a side study, part of a completed doctoral research by this author. The primary purpose of that study was to identify the role of the United States agricultural teacher education profession in international agricultural and rural development.

The doctoral study in question was designed as a complete census survey. It was to accumulate information pertaining to over 30 years of involvement of 117 agricultural teacher educators in international development activities. A principal goal of the study was to prepare a complete and comprehensive description of this involvement. Thus, this researcher was expecting very large volumes of information.

Consequently, the researcher needed a data collection technique and medium that would facilitate the gathering of the large amounts of data. Subsequently, and with the primary goal of the study in focus, the audio cassette tape with a mailed questionnaire accompaniment was selected as an appropriate technique.

The Technique

Data collection was accomplished by using two media. The primary medium was audio cassette tape which was mailed to each of the 117 identified teacher educators along with the research instrument and a cover page with directions and examples for responding to the 19 questions. The educators were asked to respond to questions by verbally recording their responses on the tape.

Rationale for Selecting the Technique

Nine factors dictated the need to use the audio cassette tape for this study over any of the three other techniques.

1. Qualitative Data Bases: Items on the research instrument based on the objectives of the study principally addressed qualitative variables. Therefore, it was inappropriate to resort to forced-choiced questionnaires or check lists alone. It required soliciting qualitative information.
2. Diversity of Experiences: Previous studies (Meaders, 1983; Thuemmel McCreight and Welton, 1983) indicated that some of the members of the population have been involved in international development activities for more than a decade. Many of them had very wide range of experiences by type of assignment, activity, and geo-political location. A data collection medium was needed to tap both the richness and diversity of those experiences.
3. Completeness and Comprehensiveness of Information Base: It was the purpose of this study to generate as completely and comprehensively as possible the past experiences of the members of the U.S. agricultural teacher education profession in international development. In addition, there was the need to

identify the future role of the profession in the same regard. Definitely, a forced-choice or even open-ended questionnaires requiring written responses would have failed to tap vast amounts of the information. Telephone or personal contacts would have been possible but cumbersome (and costly...referred to below).

4. Full and Free Disclosure: A medium or technique was needed to allow and ensure free, uninhibited yet full disclosure of all experiences arising from involvement in foreign assignments. Respondents were not going to be placed on the spot or in an awkward situation to respond to items. Likewise, they were not to be coerced to respond to, for example, a forced-choice questionnaire. The free-disclosure principle according to Dijkstra and Van der Zouwen (1982), Groves and Kahn (1979), and Dillman (1978) permits respondents to provide complete and detailed information.

5. Directness and Control of Communication: The selected data collection technique was to allow respondents to be able to adjust or "manipulate" the "response environment" to suit their own schedules and circumstances. Durbridge (1981) pointed out that one of the merits of the audio cassette tape in information gathering or dissemination was the ability to direct and control the communication process.

6. Informality of Communication: Respondents were to be offered an opportunity not only to direct and control the "response environment" but also to feel an open, informal atmosphere as well. Again Dubridge (1981) identified informality of the communication process as an advantage of this technique. Feeling

more relaxed while responding to a question or addressing issues would very likely encourage full and free disclosure of experiences.

7. Size of Population: Except for the use of a short-form check list research instrument, use of any of the other techniques to generate the kind and amount of information that was expected from 117 respondents would have been very cumbersome. It is very likely that the response rate, and completeness of and detailed responses would have been compromised if any of the three other techniques were employed.

8. Relative Cost: With a meager budget of less that $2000.00 and a population of 117 members, it was economically prudent to select a technique that would be inexpensive yet help achieve the primary goal of the study. The number of telephone calls to one respondent in order to make one "successful contact" could average more than one. Also, the amount of time to be spent with each respondent could be an average of 15 minutes barring poor connections and interruptions. Personal interviews would have required, in addition to "interview time", travel and other basic expenses to 47 of the 50 states.

9. Personal Touch Factor: This researcher recognized that so much was demanded of the 117 teacher educators. As a result, he needed a data gathering technique through which the educators could express their true inner feelings such as being concerned, cheerful, friendly, the supportive type, or the less concerned, distant, or almost cold type. Listening to the individual voices was by itself a special type of experience the researcher anticipated.

VALIDITY AND RELIABILITY ISSUES

Research on the methodological issues on use of the audio cassette tape is virtually nonexistent. Literature on the use of the medium in education particularly as an instructional material (Hurst, 1975: Miller, 1973) and in professional preparation development (Kahrs, 1971) is not abundant.

A review of available literature reveals that no study has addressed the issues of reliability or validity of data collected with the cassette tape. This researcher did not compute the reliability coefficient for the data gathered in this study. The decision not to determine the coefficient was for two reasons. First, the bulk of the information generated was highly qualitative consequently, it was difficult to subject the data to such statistical manipulations. Second, there is yet to be a formula for statistically computing reliability coefficient for qualitative data. In short, there is no such theoretical or computational base for the practitioner, for according to Miles and Huberman (1984, p.20), "There are few agreed on canons for analysis of qualitative data."

Another reiteration at this point is in order: Information from the study in question was basically qualitative in nature. Responses were provided verbally in 77 of the 96 usable cases.

From a practical standpoint and within the context of this study, a central issue on reliability, defined conceptually in terms of consistency or repeatability of results (Zeller and Carmines, 1978), needs to be considered. The question is: Would the teacher educators provide the exact responses time and again if the same research instrument was used? It is doubtful that their semantics would remain the same. But the basic information of interest to the study would probably be provided.

Though it is highly likely that the educators' responses would be consistent over time, research methodologists tend to be critical of the credibility of such qualitative data. Not surprising therefore, questions have been raised about the "natural validity" (Kennedy, 1984, p.367) of such data. Her key concerns centered on four issues: (1) obstrusiveness of the inquiry itself, (2) reliance on verbal testimony of respondents, (3) the inherent ambiguity of the language of inquiry and responses, and (4) "much of the testimony gathered is essentially hearsay evidence." The last concern does not seem to apply to this particular study. Thus, she concluded: "the quality (my underline) of the investigator's data depends on the quality of the participant's testimony; testimony that is shaped not only by their concern for social desirability, but also by things such as their insightfulness, their articulateness, and their openness" (p. 367).

From the foregoing paragraphs, it appears the problems of data validity and reliability need not necessarily be directly correlated with the use of the audio cassette tape as a data collection technique. Nonetheless, it would be appropriate to suggest that research methodologists, particularly those with great interest in qualitative data, conceptualize and formulate models for data quality analysis. A need exists to arrive at what Miles and Huberman (1984, p. 20) referred to as "agreed-on canons for analysis of qualitative data."

Data Management

Since the study was a complete census and the data basically and largely qualitative, it was inappropriate to use inferential statistical procedures for analysis. Consequently, only frequency counts, a descriptive statistic, was employed.

Responses were provided on two principal media: the audio cassette tape (n=77) and sheets of paper (n=19). This paper focuses on the handling of data from the first of the two media.

First, each tape was played back by the researcher. The information was transcribed as completely as possible one question after another. Since the credibility of qualitative data is usually in suspect, Adams (1981) suggestion that researchers focus on only the critical issues arising was heeded by this researcher. Secondly, and consequently, data for each question were then analyzed to identify commonalities, eight of which represented the specific objectives of the study. Finally, following Burstein's (1975) idea that data aggregation is a viable option for analyzing massive databases, the analyzed data were aggregated beyond the individual level.

PRELIMINARY RESULTS

Respondents were offered an opportunity to react to this data collection technique. The final item on the questionnaire requested free contribution to the debate in the use of the cassette tape in this study. Responses to that item are presented in Table 2 (negative and cautionary comments) and Table 4 (positive remarks). The question was:

> "Would you have preferred providing this information using some other method? Please be specific."

Drawbacks

It is obvious that there are both actual and potential problems associated with use of audio cassette tape in any type of educational endeavor. Miller (1973) identified two specific drawbacks when he used the audio cassette tape as an instructional Tool. These, he noted, were monotony of listening and problem of rapid random access to specific responses.

Hurst (1975) cautioned users of the medium on three key issues. The first relates to the listening time when the tape is played back. Second, there is the fact that someone (in this case a potential respondent) may not have access to a recorder to provide responses. Finally, he noted the difficulty with shortage of magnetic material such as the tape for any long periods of time.

The specific experiences of both this researcher and the respondents regarding drawbacks to the technique are presented in Table 1 and Table 2. Table 1 is a summary of experiences and Table 2 represents testimonies of respondents.

Table 1

Actual and Potential Drawbacks in Using the Audio Cassette Tape as Data Collection Medium.

	The Researcher	Respondents
Actual		
	1. Time consuming transcription phase; an average of 50 minutes for each of 77 tapes	1. Time-consuming recording process (n=6)
	2. Difficulty with data analysis; time to analyze and identify commonalities was long	2. Difficulty in reviewing responses (n=1)
	3. Difficulty with data evaluation since data bases were massive	
	4. Difficulty with data summary	
	5. Untenable assumptions: a) that the cassette tapes were usable (n=2) b) that each potential respondent had access to recording equipment (n=2)	
Potential		
	1. Difficulty in interpretation and use of data (n=5) a) Poor transcription could compromise any attempt to directly quote respondents b) problem with possible ambiguity of the language of responses	1. Inability to express self clearly and easely could lead to (n=3) a) waste of tape b) limited useful information

Note: The number in parentheses indicates the frequency of reactions

Table 2

Reactions of Respondents to the Use of Cassette Tapes as the Data Collection Medium in this Study: Negative and Cautionary Comments

1. "Easier using a questionnaire with a checklist."
2. "Would have preferred writing."
3. "On this paper, saved time"
4. "The only problem is one cannot easily review the responses that one has made."
5. "I prefer the method I chose."(He responded on the questionnaire).
6. "However, there will be probably some concerns if some quotes are taken out of context then used in a thesis. Normally, I would prefer putting down in writing anything that might be quoted in exactitude. If quotes are misused it could cause later problems."
7. "One thing I might be doing is just rambling on and not giving you the information that you need."
8. "You as the researcher is going to have a problem sorting out what's relevant and what isn't from the conversation."
9. "I think this might provide some difficulty for you in determining what you want to write out of this."
10. "I need to organize and write my responses. The tape recorder is time-consuming for me to use. I'd rather have my responses in writing so that I can see what I'm really presenting to you and not use a lot more words that what I'd really use. Although using a tape recorder is a good idea and is one way of hearing the persons voice as they relay their ideas and experiences to you, one of the major problems of using a tape recorder for a study of this type is that you have to interpret what the person filling out the research information form is really trying to say."
11. "Yes. Your tape was bad for some reason. I lost patience in working with it and gave up. My time is too valuable to be wasted on poor tapes. My written responses were done in 15 minutes. Sorry about your desire to have this on tape. Sometimes our best plans don't work out."
12. "I'm not sure. ---. A little frustrating to go through the countries one after another."
13. "The questionnaire developed to solicit the information on this project is very much open-ended and seems to be designed to hunt for general interesting information rather than specific questions other than the generalized ones of this particular study."

Table 2 continues

Table 2 continued

14. "It required that I get a tape recorder to work to make sure that it was operating before I completed this questionnaire. If I were to answer the questions by handwriting or questionnaire, I would have probably gotten this back quicker to you."

15. "I would have preferred to have typed this rather than to have used the cassette."

16. "I guess I'm a traditionalist. A pencil-and-paper questionnaire would have resulted in quicker response, at least for me."

17. "Sorry, but I was simply unable to use the cassette as suggested. I hope this written format is acceptable."

18. "I think it would be very difficult to summarize the information."

19. "Yes. I feel that I would have been much more effective if I would have been able to express my thoughts on paper as opposed to tape. Doing this was very time-consuming."

20. "Yes. I guess I would have preferred check-off kind of response since the responses that I made would not have been what you had in mind."

21. "I think that a regular format would have been just as good in this case."

22. "As for providing the information, I might have been able to get the information to you quicker, had I not had to arrange for a tape recorder and take the time to record it. ---. (Now, that may simply have been my problem rather than the research method)."

23. "However, I do not envy you in your evaluations."

24. "Preference option taken. Sorry." (Note: He responded on paper.)

25. "I believe it would be a good way to respond but perhaps more difficult to analyze."

26. "Yes. My tape was jammed in such a manner that I have not been able to play any of it."

27. "This method is fine." (Note: He wrote his responses.)

28. "---. I feel that probably using a tape could be effective in some other kinds of study. But I felt that this kind of questionnaire I could have been more effective if I had been able to express it in writing."

Merits

Previous studies indicate the audio cassette tape has some merits. Kahrs (1971), for example, believes the medium facilitates comprehensive and informative evaluation. Hence, it is an effective feedback technique. He further points out that "The cassette tape not only allows personal, live interaction but it encourages one to evaluate in its total perspective the assignment undertaken" (p.160).

According to Miller (1971) the tape technique has four major advantages as an instructional material. Three of them directly relate to this study. They are the relatively low cost, compactness and convenience, and relatively rapid rate of speaking.

Hurst (1975) notes three merits of the use of this medium. The first of these is the explicative or the ability to explain in detail. Next, it is a time-saving device for the user . Finally, there is the ease factor for verbalizing responses.

Table 3 is a summary of the specific merits related to this researcher and the testimonies of the respondents. The number in parentheses indicates the number of testimonies. Listed in Table 4 are testimonies of some respondents regarding the merits of the technique.

Table 3

Actual and Potential Merits in Using the Audio Cassette Tape as Data Collection Medium

	Researcher	Respondents
Actual		
	1. Accumulation of wealth of information spanning over 30 years of multitudes of activities by 77 teacher educators in over 60 different countries	1. Time-saving: Some respondents (n=8) felt the technique was a time-saver
	2. Efficiency: compactness and convenience of the (120-minute) tape; compare it to the use of other medium for the same kind and amount of data	2. Free-disclosure facilitated: a number of respondents (n=3) said the technique allowed them to freely disclose information in detail
	3. Cost effectiveness: collecting data from the 77 educators via any of the other three techniques would have been very expensive	3. Thought-provoking: in the opinion of one respondent (n=1) the method permitted me to think much deeply before responding
	4. Personal, live interaction is facilitated	4. Novelty: The technique was perceived by some respondents (n=10) as a unique approach
		5. Informality of response environment (n=4)
Potential		
	1. Reduction in response sets typical of respondents confronted with critical, sensitive issues	1. Control or directness: "manipulate" the entire information-giving process
	2. No problem with response variance in this particular study since experiences varied greatly.	2. Flexibility of the communication process on part of each respondent

Note: The number in parentheses indicates the frequency of reactions

Table 4

Reactions of Respondents to the Use of Cassette Tapes as the Data Collection Medium in this Study Positive Comments

1. "I like it. It's rewarding; permitted deeper thinking"
2. "Much quicker"
3. "Most pleasant way to respond to any inquiry"
4. "My time was saved"
5. "It's alright. I would probably have written more than I said"
6. "So far as I'm concerned, this is a very good way to get a lot of information"
7. "I wouldn't have taken the time to have written all this in long hand"
8. "I think this worked Okay"
9. "This method of information referral is certainly satisfactory with me"
10. "If I had a whole lot of to say, this might have been the easier method"
11. "I have no problem with the tape recorder. It's a unique idea. I'm happy to do it."
12. "I must admit this is a very novel but time-saving way of providing this information"
13. "This is alright"
14. "I think this method is quite alright"
15. "This method appears to be a useful one for providing for these types of studies. I have no problems with utilizing the tape in giving you my response."
16. "It has loosened me up to say certain things I probably wouldn't have said if I had to write them down."
17. "No problem for me.----. You probably have got a lot than you would have if it had been written. I like it."
18. "This method of collecting data was quite acceptable."
19. "No. I feel comfortable in using the tape.----. I think this is a novel idea to use the tape and make a recording rather than write it down. It definitely did save me time."
20. "This suits me just fine."
21. "No. I think you had a good idea in using a tape recorder for your responses."
22. "No. This was quite quick."
23. "Method, O.K."
24. "Heck! This was a real treat. I enjoyed responding over the tape recorder."

Table 4 continues

Table 4 continued

25. "This method is fine once I took the time to sit down and put it on tape."

26. "The tape situation is O.K. I have no problems with it."

27. "Probably no. This way was O.K."

28. "No. This method of providing information was quite adequate."

29. "I'm enthused about this method. I hope that my tape is understandable.-----. But I think it is a fine medium. I've enjoyed responding by tape."

30. "The format of the tape is fine. I'm sure that you can get a lot more information as long as you can transcribe it and understand what I am saying."

31. "I do appreciate this method of data collection. And because of that I do want to cooperate fully."

32. "Okay. (However, it provided opportunity to ramble.)"

33. "O.K."

34. "I think in terms of my own case, this is a good medium."

35. "I think this is a good approach. It is unique. I have used it once in working with a blind doctoral student. I gave him all of his questions on one tape. He answered them on another. It worked out to his satisfaction and ours too."

36. "It was a different approach. It was a unique approach."

37. "This is an innovative way to provide the information. I expect to become more comfortable with it over time."

38. "My response is generally positive. I sometimes get tired of drafting memos and writing letters. This is a long questionnaire. This method of responding was probably more suitable than another writing exercise. I appreciate the cassette tape and the chance to respond in this way."

39. "I think this is a very efficient way to get information. If a person writes out his/her answers, they might be a little more condensed. But then again, they are less likely to do it."

40. "I find this method very unique. I have used something similar to this in trying to get a handle on what constitutes good teaching.-----. This reaffirms my idea on that. This is an effective way of communicating. Research results can be compiled from tapes."

41. "This is a unique idea in using the tape. I congratulate you on it."

TENTATIVE CONCLUSIONS AND SUGGESTIONS

Conclusions

1. Researchers dealing with highly qualitative data would find the use of the audio cassette tape as a data collection medium quite useful especially if they expect to tap vast amounts of information.
2. Successful use of the technique appears to depend largely on adequate, detailed planning in advance on how to conduct the data transcription and analysis phases.

Suggested Research

1. The technique would yield satisfactory results with one major precondition: if it is determined that members of the population have the ability to verbally express themselves eloquently. Under such a circumstance the researcher should consider use of the method.
2. Other researchers employ the technique where appropriate to determine whether the above preliminary merits and drawbacks as experienced by both this researcher and his responding population could be supported or shown to be a series of isolated experiences.
3. Comparative analytic studies be conducted on the relative advantages and problems associated with all four techniques under discussion here: audio cassette tape, personal interview, telephone interview, and mailed questionnaire.

4. Research need to be undertaken to address use of the audio cassette tape technique in relation to such specific issues as:

   a) non-response rate: the average lower limit of which Lindstrom (1983) believes is between 5-10 percent; the question of particular importance would be: Is there a consistent deviation (above or below) from this limit? If so what factors are responsible for the changes?

   b) non-response type research questions to be considered would include: What is the minimum proportion of the item non-response type? refusers? non-accessible persons?

   c) characteristics of non-respondents: efforts should be directed at identifying those characteristics that distinguish non-respondents from respondents; also to delineate the differences among the various types of non-respondents.

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